Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-25 (cancelled).

Claim 26. (previously presented) A method of measuring the concentration of particles in a solution, the method comprising:

depositing a measured quantity of the solution on a sensor having a membrane layer;

allowing the solution to evaporate until the particles remain on the membrane layer;

driving the membrane layer at a reference resonant frequency;

detecting the shift in frequency of the membrane layer due to the mass of the particles;

determining the mass of the particles based on the shift in frequency; and

based on the measured quantity of the solution and the mass of the particles, automatically calculating the concentration of the particles in the solution.

Claim 27. (previously presented) A method of measuring the concentration of particles in a solution, the method comprising:

depositing a measured quantity of the solution on a flexural plate wave device;

allowing the solution to evaporate until the particles remain on the flexural plate wave device;

driving the flexural plate wave device at a reference resonant frequency;

detecting the shift in frequency of the flexural plate wave device due to the mass of the particles;

determining the mass of the particles from the shift in frequency; and

based on the measured quantity of the solution and the mass of the particles, automatically calculating the concentration of the particles in the solution.

Claim 28. (previously presented) A concentration detection system comprising:

a sensor having a membrane layer for receiving a substance thereon;

an oscillator for driving the membrane layer at a reference resonant frequency;

a solution deposition device for delivering a known quantity of a

solution containing particles to the membrane layer;

a transducer for detecting the change in frequency of the membrane layer due to the particles after the solution evaporates; and

a processor configured to automatically determine the mass of the particles based on the change in frequency, and to calculate the concentration of the particles in the solution based on the mass of the particles and the quantity of the solution deposited.

Claim 29. (previously presented) The system of claim 28 wherein said sensor is a flexural plate wave sensor.

Claim 30. (previously presented) A concentration detection system comprising:

a flexural plate wave device;

an oscillator for driving the flexural plate wave device at a reference resonant frequency;

a solution deposition device for delivering a known quantity of a solution containing particles to the flexural plate wave device;

a transducer for detecting the change in frequency of the flexural plate wave device due to the particles after the solution evaporates; and

a processor configured to automatically determine the mass of the particles based on the change in frequency, and to calculate the concentration of the

particles in the solution based on the mass of the particles and the quantity of the solution deposited.

Claim 31. (previously presented) The system of claim 29 wherein said flexural plate wave sensor is formed from a silicon substrate and said membrane is formed from a silicon layer.

Claim 32. (currently amended) The system of claim 29 wherein said flexural plate wave sensor further includes a piezoelectric layer formed on said membrane layer, and said transducer includes a first ~~second~~ transducer disposed on said piezoelectric layer and a second ~~third~~ transducer disposed on said piezoelectric layer, spaced from said first ~~second~~ transducer.

Claim 33. (currently amended) The system of claim 32 wherein said oscillator device is connected to said first ~~second~~ transducer for driving said membrane at said reference resonant frequency and said processor includes a frequency detection device connected to said second ~~third~~ transducer for determining the change in said reference frequency.

Claim 34. (previously presented) The system of claim 28 wherein said sensor further includes a plurality of walls peripheral to said membrane, said plurality of walls cooperating to define a cavity having said membrane as a bottom portion thereof.

Claim 35. (previously presented) The system of claim 28 wherein the deposition of the substance on the membrane causes a decrease in the reference resonant frequency, thereby indicating an increase in the mass of the substance disposed on the membrane.

Claim 36. (previously presented) The apparatus of claim 28, wherein said substance is present in a volume of a volatile solution which is deposited on said membrane, the mass of the substance being measured after the solution evaporates, leaving the substance on the membrane.

Claim 37. (previously amended) The system of claim 28, in which said processor further includes a concentration determining device for comparing the mass of the substance to the volume of the solution to determine the concentration of the substance within the volume of the solution.

Claim 38. (previously presented) The system of claim 28 wherein the substance is a non-volatile residue.

Claim 39. (previously presented) The system of claim 28 further including a display device connected to said microprocessor for displaying the mass of said

substance.

Claim 40. (previously presented) The system of claim 28 wherein an increase in the reference resonant frequency indicates a decrease in the mass of the substance on the membrane.

Claim 41. (previously presented) The system of claim 28 including a plurality of sensors configured in an array, each of the sensors being connected between said oscillator device and said frequency detection device.

Claim 42. (previously presented) The system of claim 28 in which said system measures the mass of a substance when the substance is present at values as low as about 200 picograms/mm^2.